REMARKS

Reconsideration of this application is requested. Claims 1 and 3-22 are in the case. Claim 2 has been canceled without prejudice.

Claims 1, 3-7 and 13-22 stand rejected under 35 U.S.C. 103(a) as allegedly unpatentable over U.S. Patent No. 5,688,419 in view of U.S. patent 3,696,228 to Thomas et al. Claims 8-12 stand rejected under 35 U.S.C. 103(a) as allegedly unpatentable over U.S. Patent No. 5,688,419 in view of U.S. patent 5,714,735 to Offer. Those rejections are respectfully traversed.

Without conceding to the merit of the rejections, claim 1 has been amended to specify that the cladding is corrosion resistant cladding (CRC). Basis appears at page 18, line 1 through to page 19, line 20. No new matter is entered.

As now claimed, the method of the invention is directed to joining a corrosion resistant cladding to a surface of a component of a nuclear reactor at a region susceptible to stress corrosion cracking. The method comprises welding the corrosion resistant cladding to the surface of the component under conditions of low heat input to achieve reduced thermal sensitization.

Offer '419 focuses on a methodology which provides improvement in the detrimental tensile residual stress condition on the root side of welds, especially on the inside wall of piping welds, by utilizing high welding torch travel speeds (see Abstract and column 3, lines 23-29). Offer '419 does not suggest joining a "corrosion resistant cladding" to a surface of a component of a nuclear reactor at a region susceptible to stress corrosion cracking under conditions of low heat input to achieve reduced thermal sensitization.

The cited secondary art fails to cure that deficiency, and does not generate a *prima facie* case of obviousness when taken with Offer '419. Thomas relates to construction of heavy-walled pressure vessels, wherein cladding is applied to a composite pressure vessel to provide structural reinforcement (23) to the outside surfaces over a conventionally produced roll-bonded (non-welded) corrosion resistant layer (21), which is formed against a backing material (20). Thomas does not focus on weld cladding to produce improved corrosion resistance by reducing thermal sensitization and surface residual stresses.

In light of the above, it is clear that the presently claimed invention is not rendered obvious by the combined disclosures of Offer '419 and Thomas. There would have been no motivation to combine the disclosures of those two references in the context of the present invention. Even if such a combination had been contemplated (it is believed that would not have occurred), the present invention as now claimed would not have resulted or have been rendered obvious thereby. Absent any motivation to combine the cited disclosures, it is clear that a *prima facie* case of obviousness has not been made out. Withdrawal of all of the obviousness rejection is respectfully requested.

The obviousness rejection of Claims 8-12 over Offer '419 and Offer '735 likewise must be withdrawn. The rejected claims are all dependent on amended Claim 1 and incorporate the features of Claim 1, which are patentable over the cited for the above-discussed reasons.

With particular reference to Claims 9, 10, 11, and 12, the use of noble metal addition in the filler provides an efficient, catalytic recombination of oxygen in the service water with available hydrogen to form water, thereby eliminating the root cause

of stress corrosion (high levels of free oxygen, and the corresponding high electrochemical potential). It would not have been obvious to one of ordinary skill in the welding art to provide control of corrosion by engineering a specific, narrow composition range of noble metal addition to the filler to limit the electrochemical potential (as well as the expected compositional control achieved by the use of a conventionally alloyed layer), such as is described in the present application.

With regard to Claims 6 and 7, it would not have been obvious in the context of the presently claimed invention that there is a finite and practical threshold of heat input below which thermal sensitization will not occur, especially for high-carbon austenitic materials. This is evidenced by the fact that decades of trying to do so have all failed until the current work was performed, which uniquely specifies that such welding be performed <u>above</u> the critical torch speed and corresponding low heat input, as discovered in the present experimentation and reported in the application disclosure.

With reference to Claim 15, while it is known that Delta Ferrite will form when welding steel, it was not known and would not have been obvious to one of ordinary skill, in the context of the present invention, that a very <u>fine</u> morphology of Ferrite is formed in weld samples produced while operating simultaneously above the claimed minimum torch speed, and below the maximum heat input (see Figure 8). The maximum fineness of the Ferrite cannot be achieved unless the weld pool freeze rate is significantly greater than achieved by all known arc-based weld cladding practices.

For all of the above reasons, the obviousness rejections should be withdrawn. Such action is respectfully requested.

Allowance of the application is awaited.

Respectfully submitted,

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